



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,302	10/27/2003	Daizo Andoh	10873.742USD1	4187
52835	7590	01/24/2006	EXAMINER	
HAMRE, SCHUMANN, MUELLER & LARSON, P.C. P.O. BOX 2902-0902 MINNEAPOLIS, MN 55402			TRINH, MINH N	
			ART UNIT	PAPER NUMBER
			3729	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/695,302

Applicant(s)

ANDOH ET AL.

Examiner

Minh Trinh

Art Unit

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 October 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16-27 is/are pending in the application.  
4a) Of the above claim(s) 25 and 26 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 16-24 and 27 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☒ Certified copies of the priority documents have been received in Application No. 09/879,385.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/17/04, 8/30/04, 10/27/03

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 16-24 and 27 in the reply filed on 10/24/05 is acknowledged. Thus, claims 25-26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Invention II, there being no allowable generic or linking claim. Election was made **without** traverse dated 10/24/05. An action on the merits of elected claims 16-24 as follows.

### ***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the method claims are directed.
3. The abstract should be revised to readable on the method instead of product invention.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 17-19, 23 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a) "the resin layer" (claim 17, line 2) lacks proper antecedent basis.

Art Unit: 3729

b) What is being refer as " in a prepeg stage comprises a void. . ." (claim 18, line 2) please describe in details.

c) "the void" (claim 19, line 2) lacks proper antecedent basis.

d) claim 23 appears to be similar to claim 16 should have been cancelled because it is not further limit the linking or base claim 16.

e) It is unclear whether the recites: "at least one inorganic filler "(claim 27, line 2) is as same as "a conductive filler" of its base claim 16, line 6?

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 16-24 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakatani (5,888,627).

Nakatani discloses method for manufacturing PCB including steps: preparing a dielectric substrate 100 of a pre-preg formed by impregnating a glass cloth or a glass non-woven fabric with a thermosetting epoxy resin mixed with fine particles (see the discussion at col. 2, lines 25-28, and col. 8, lines 35-36, 47-67),

coating both surface of the substrate with mold releasing film 102 and subsequently forming a via hole 103 (see process shown in Fig. 1A-1D),

Art Unit: 3729

filling the via hole 103 with a conductive 104 containing a conductive filler having an average particle diameter larger than an average diameter of the fine particles,

peeling the mold releasing films 102 and layering metal foils 105 on the surfaces of the dielectric substrate,

compressing the dielectric substrate 100 having the metal foils 105 by applying heat and pressure to adhere the dielectric substrate and the metal foils and to connect electrically the metal foils with each other (see the discussion at col. 9, lines 38-55), and

forming the foils to have a predetermined pattern 106 (as shown in end process stage of Fig. 1G).

As applied to claims 17-21, Nakatani discloses where the substrate 100 having thickness of 50 $\mu$ m (see col. 7, lines 39-40, and col. 9, line 4). The dielectric substrate having at least a void in a pre-preg stage and thinning by pressing as recited in claims 18-20 (see col.9, lines 59-60).

As applied to claim 22, Nakatani discloses process of claim 22 it is inherent that by applying heat and pressure would reduce the thickness of the via hole and the substrate (see the discussion at col. 7, lines 45-48, etc.,).

As applied to claim 23, limitation of claim 23 is met by Nakatani (see discussion in section 7, paragraph 1 above).

As applied to claim 24, limitation of this claim is met by Nakatani (see Figs. 1- 4, which shows a plurality of double sides PCB are formed in combination w/ the discussion in section 7, paragraph 1 above ).

As applied to claim 27, noting the Nakatani reference discloses the organic filler having the configurations similar to the one as claimed in claim 27 (see the discussion at col. 3, lines 35-50, etc.,).

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Trinh whose telephone number is (571) 272-4569. The examiner can normally be reached on Monday -Thursday 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (571) 272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mt  
1/19/06

  
**MINH TRINH**  
**PRIMARY EXAMINER**